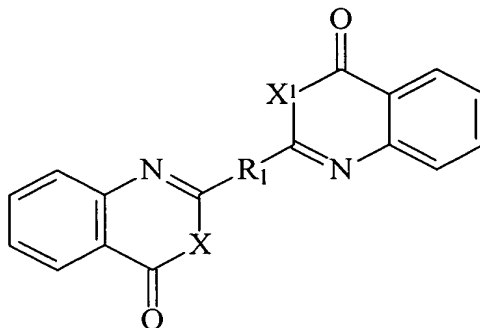


CLAIMS

What is claimed is:

1. An organic light emitting device, comprising an emitting layer, said emitting layer comprising a compound according to Formula I:

(Formula I)



wherein X and X' are independently NH or O ;

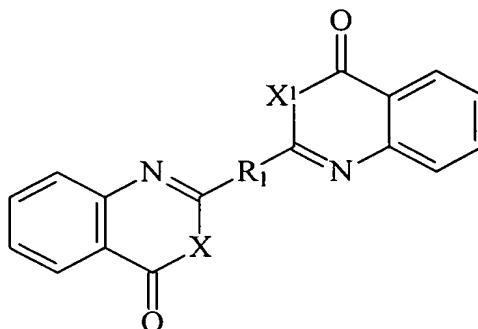
R_1 represents a bond; or from 1 to 3 ring structures, each independently selected from the group consisting of: monocyclic aryls containing 3 to 10 carbon atoms, multicyclic aryls containing 7 to 14 carbon atoms, each monocyclic aryl and multicyclic aryl optionally substituted with one or more hydroxy, halo, acetoxy, or 4H-3,1-benzoxazin-4-one groups; 4 to 10 ring member monocyclic heteroaryls, and 6 to 14 ring member multicyclic heteroaryls, each monocyclic heteroaryl and multicyclic heteroaryl optionally substituted with one or more hydroxy, halo or acetoxy groups.

2. The compound according to claim 1, wherein said monocyclic aryl is a phenyl ring.
3. The compound according to claim 2, wherein said phenyl ring is substituted with fluorine.
4. The compound according to claim 2, wherein said phenyl ring is substituted with hydroxy.
5. The compound according to claim 2, wherein said phenyl ring is substituted with acetoxy.

6. The compound according to claim 2, wherein said phenyl ring is substituted with 4H-3,1-benzoxazin-4-one.
7. The compound according to claim 1, wherein said multicyclic aryl is selected from the group consisting of naphthyl, phenanthryl, and anthracenyl.
8. The compound according to claim 1, wherein said monoheterocyclic aryl is selected from the group consisting of pyridine and pyrimidine.
9. The compound according to claim 1, wherein X is NH and X' is NH.
10. The compound according to claim 1, wherein X is O and X' is O.
11. The compound according to claim 1, wherein said halo group is selected from the group consisting of fluorine, chlorine, iodine, and bromine.
12. A compound according to claim 1, wherein the compound is selected from the group consisting of: 2,2'-(1,4-phenylene)bis-4H-3,1-benzoxazin-4-one; 2,2'-(1,4-naphthylene)bis-4H-3,1-benzoxazin-4-one; [2,2']bi-[benz[d][1,3]oxazinyl]-4,4'-dione; 2,2',2''-(1,3,5-phenylene)tris-4H-3,1-benzoxazin-4-one; 2,2'-(1,5-pyridyl)bis-4H-3,1-benzoxazin-4-one; 2,2'-(1,3-phenylene)bis-4H-3,1-benzoxazin-4-one; 2,2'-(1,4-naphthylene)bis-4H-3,1-benzoxazin-4-one; 2,2'-(1,4-phenylene)-2,3,5,6-tetrafluoro)bis-4H-3,1-benzoxazin-4-one; 3H, 3'H-[2,2']-1,4-phenylene-bis-quinazolin-4-one; 2,2'-(1,4-pyridyl)bis-4H-3,1-benzoxazin-4-one; 2,2'-(1,4-phenylene-2,5-diacetoxy)bis-4H-3,1-benzoxazin-4-one; 2,2'-(1,4-phenylene-2,5-dihydroxy)bis-4H-3,1-benzoxazin-4-one; 3H, 3'H-[2,2']-biquinazolinyl-4,4'-dione; and 2,2''-(4,4''-biphenylene)bis-4H-3,1-benzoxazinone.
13. A method for emitting electromagnetic radiation with at least one wavelength between about 400 and about 490 nm, comprising the steps of:

providing an organic light emitting device comprising an emitting layer interposed between a hole transport layer and an electron transport layer, said hole transport layer interposed between an anode layer and said emitting layer, and said electron transport layer interposed between a cathode layer and said emitting layer, wherein at least one of said anode layer and said cathode layer is transparent, said emitting layer comprising a compound according to Formula I:

(Formula I)



wherein X and X' are independently NH or O;

R₁ represents a bond; or from 1 to 3 ring structures, each independently selected from the group consisting of: monocyclic aryls containing 3 to 10 carbon atoms, multicyclic aryls containing 7 to 14 carbon atoms, each monocyclic aryl and multicyclic aryl optionally substituted with one or more hydroxy, halo, acetoxy, or 4H-3,1-benzoxazin-4-one groups; 4 to 10 ring member monocyclic heteroaryls, and 6 to 14 ring member multicyclic heteroaryls, each monocyclic heteroaryl and multicyclic heteroaryl optionally substituted with one or more hydroxy, halo or acetoxy groups; and,

applying an electrical potential to said device between said cathode and anode so that said compound of said emitting layer emits said electromagnetic radiation.

14. An organic light emitting device containing an emitting layer interposed between two electrodes, one of said electrodes being transparent, said device comprising:

an anode electrode layer;

a hole transport layer;

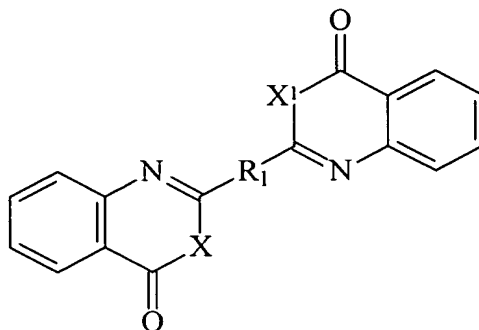
an electron transport layer;

a cathode electrode layer;

an emitting layer interposed between said hole transport layer and said electron transport layer, said hole transport layer interposed between said anode layer and said emitting layer, and said electron transport layer interposed between said cathode layer and said emitting layer, wherein at least one

of said anode layer and said cathode layer is transparent, said emitting layer comprising a compound according to Formula I:

(Formula I)



wherein X and X' are independently NH or O ;

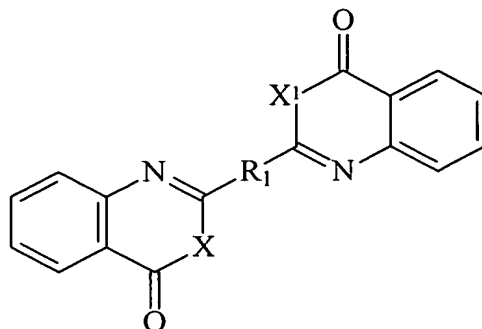
R_1 represents a bond; or from 1 to 3 ring structures, each independently selected from the group consisting of: monocyclic aryls containing 3 to 10 carbon atoms, multicyclic aryls containing 7 to 14 carbon atoms, each monocyclic aryl and multicyclic aryl optionally substituted with one or more hydroxy, halo, acetoxy, or 4H-3,1-benzoxazin-4-one groups; 4 to 10 ring member monocyclic heteroaryl, and 6 to 14 ring member multicyclic heteroaryl, each monocyclic heteroaryl and multicyclic heteroaryl optionally substituted with one or more hydroxy, halo or acetoxy groups;

15. The device according to claim 14, wherein the compound according to Formula I is selected from the group consisting of: 2,2'-(1,4-phenylene)bis-4H-3,1-benzoxazin-4-one; 2,2'-(1,4-naphthylene)bis-4H-3,1-benzoxazin-4-one; [2,2']bi-[benz[d][1,3]oxa-zinyl]-4,4'-dione; 2,2',2''-(1,3,5-phenylene)tris-4H-3,1-benzoxazin-4-one; 2,2'-(1,5-pyridyl)bis-4H-3,1-benzoxazin-4-one; 2,2'-(1,3-phenylene)bis-4H-3,1-benzoxazin-4-one; 2,2'-(1,4-naphthylene)bis-4H-3,1-benzoxazin-4-one; 2,2'-(1,4-phenylene)-2,3,5,6-tetrafluoro)bis-4H-3,1-benzoxazin-4-one; 3H, 3'H-[2,2']-1,4-phenylene-bis-quinazolin-4-one; 2,2'-(1,4-pyridyl)bis-4H-3,1-benzoxazin-4-one; 2,2'-(1,4-phenylene-2,5-diacetoxy)bis-4H-3,1-benzoxazin-4-one; 2,2'-(1,4-phenylene-2,5-dihydroxy)bis-4H-3,1-benzoxazin-4-one; 3H, 3'H-[2,2']-biquinazolinyl-4,4'-dione; and 2,2''-(4,4''-biphenylene)bis-4H-3,1-benzoxazinone.

16. The device according to claim 14, wherein said emitting layer has an intensity peak wavelength of about 400 to about 490 nm.

17. The device according to claim 14, wherein the emitting layer further comprises 4,4''-N,N'-dicarbazole-biphenyl.
18. The device according to claim 14, wherein the emitting layer consists of 2,2'-(1,4-phenylene)bis-4H-3,1-benzoxazin-4-one and 4,4''-N,N'-dicarbazole-biphenyl in a ratio of 4:9.6.
19. The device according to claim 14, incorporated into a large display for displaying image information.
20. A method for manufacturing the device according to claim 14, comprising:
- providing a substrate layer;
 - disposing a first electrode layer directly on said substrate layer;
 - disposing a hole transport layer directly on said first electrode layer on the side opposite said substrate layer;
 - disposing an emitting layer directly on said hole transport layer on the side opposite said first electrode layer, said emitting layer comprising a compound according to Formula I;
 - disposing an electron transport layer directly on said emitting layer on the side opposite said hole transport layer; and,
 - disposing a second electrode layer directly on said electron transport layer on the side opposite said electron transport layer, one of said first electrode layer and said second electrode layer being transparent.
21. An emitter composition for organic light emitting devices, comprising a host compound and an emitting compound according to Formula I:

(Formula I)



wherein X and X' are independently NH or O;

R₁ represents a bond; or from 1 to 3 ring structures, each independently selected from the group consisting of: monocyclic aryls containing 3 to 10 carbon atoms, multicyclic aryls containing 7 to 14 carbon atoms, each monocyclic aryl and multicyclic aryl optionally substituted with one or more hydroxy, halo, acetoxy, or 4H-3,1-benzoxazin-4-one groups; 4 to 10 ring member monocyclic heteroaryls, and 6 to 14 ring member multicyclic heteroaryls, each monocyclic heteroaryl and multicyclic heteroaryl optionally substituted with one or more hydroxy, halo or acetoxy groups.

22. The composition according to claim 21, wherein said host comprises 4,4''-N,N'-dicarbazole-biphenyl.